Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

0060507

03-RCA-0394

OCT 1 2003

Mr. Allen W. Conklin, Supervisor
Air Emissions and Defense Waste Section
Washington State Department of Health
P.O. Box 47827
Olympia, Washington 98504

Mr. O. S. Wang
Nuclear Waste Program
State of Washington
Department of Ecology
1315 West Fourth Avenue
Kennewick, Washington 99336

RECEIVED
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Addressees:

DOE/RL-2002-56, REVISION 1, RADIOACTIVE AIR EMISSIONS NOTICE OF CONSTRUCTION (NOC) FOR TANKER TRUCK LOADING OF RADIOACTIVE CONTAMINATED WASTEWATER AND AN OFF-PERMIT CHANGE

Enclosed is a copy of the subject NOC application. This NOC application is being submitted to the Washington State Department of Health, Division of Radiation Protection, for approval pursuant to Washington Administrative Code 246-247-060.

For the activities described in this NOC which entail tanker truck loading of radioactive contaminated wastewater on the Hanford Site, the total estimated unabated and abated effective dose equivalents to the hypothetical, maximally exposed individual are 3.0 E-02 millirem per year.

Also enclosed is a Notification of Off-Permit Change to incorporate the NOC for potential radioactive air emissions from deactivation activities into the Hanford Site Air Operating Permit (AOP). This information is being provided to the State of Washington Department of Ecology consistent with its role as lead for the Hanford Site AOP.

If you have any questions, please contact Mary F. Jarvis, Regulatory Compliance and Analysis Division, on (509) 376-2256.

Sincerely,

Keith A. Klein
Manager

RCA:MFJ

Enclosures

cc: w/encls:
R. H. Engelmann, FHI
R. H. Gurske, FHI
K. A. Hadley, FHI
S. Harris, CTUIR
M. T. Jansky, FHI
R. Jim, YN
B. Nelson-Maki, FHI
P. Sobotta, NPT
R. W. Szelmeczka, FHI
Environmental Portal, LMSI
Admin Record

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TERMS

ALARA	as low as reasonably achievable
ALARACT	as low as reasonably achievable control technology
BARCT	best available radionuclide control technology
CFR	Code of Federal Regulations
Ci	curie
cm^2	square centimeters
DOE-RL	U.S. Department of Energy, Richland Operations Office
DOT	U.S. Department of Transportation
dpm	disintegrations per minute
ETF	200 Areas Effluent Treatment Facility
HPT	health physics technician
LERF	liquid effluent retention facility
MEI	maximally exposed individual
mrem	millirem
MPR	maximum public receptor
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOC	notice of construction
PCM	periodic confirmatory measurements
PTE	potential to emit
RWP	radiation work permit
SEPA	*State Environmental Policy Act of 1971*
TEDE	total effective dose equivalent
TSD	treatment, storage, and/or disposal
WAC	Washington Administrative Code
WDOH	Washington State Department of Health

METRIC CONVERSION CHART

Into metric units			Out of metric units		
If you know	Multiply by	To get	If you know	Multiply by	To get
Length			**Length**		
inches	25.40	millimeters	millimeters	0.03937	inches
inches	2.54	centimeters	centimeters	0.393701	inches
feet	0.3048	meters	meters	3.28084	feet
yards	0.9144	meters	meters	1.0936	yards
miles (statute)	1.60934	kilometers	kilometers	0.62137	miles (statute)
Area			**Area**		
square inches	6.4516	square centimeters	square centimeters	0.155	square inches
square feet	0.09290304	square meters	square meters	10.7639	square feet
square yards	0.8361274	square meters	square meters	1.19599	square yards
square miles	2.59	square kilometers	square kilometers	0.386102	square miles
acres	0.404687	hectares	hectares	2.47104	acres
Mass (weight)			**Mass (weight)**		
ounces (avoir)	28.34952	grams	grams	0.035274	ounces (avoir)
pounds	0.45359237	kilograms	kilograms	2.204623	pounds (avoir)
tons (short)	0.9071847	tons (metric)	tons (metric)	1.1023	tons (short)
Volume			**Volume**		
ounces (U.S., liquid)	29.57353	milliliters	milliliters	0.033814	ounces (U.S., liquid)
quarts (U.S., liquid)	0.9463529	liters	liters	1.0567	quarts (U.S., liquid)
gallons (U.S., liquid)	3.7854	liters	liters	0.26417	gallons (U.S., liquid)
cubic feet	0.02831685	cubic meters	cubic meters	35.3147	cubic feet
cubic yards	0.7645549	cubic meters	cubic meters	1.308	cubic yards
Temperature			**Temperature**		
Fahrenheit	subtract 32 then multiply by 5/9ths	Celsius	Celsius	multiply by 9/5ths, then add 32	Fahrenheit
Energy			**Energy**		
kilowatt hour	3,412	British thermal unit	British thermal unit	0.000293	kilowatt hour
kilowatt	0.94782	British thermal unit per second	British thermal unit per second	1.055	kilowatt
Force/Pressure			**Force/Pressure**		
pounds (force) per square inch	6.894757	kilopascals	kilopascals	0.14504	pounds per square inch

06/2001

Source: *Engineering Unit Conversions*, M. R. Lindeburg, PE., Third Ed., 1993, Professional Publications, Inc., Belmont, California.

RADIOACTIVE AIR EMISSIONS NOTICE OF CONSTRUCTION FOR TANKER TRUCK LOADING OF RADIOACTIVELY CONTAMINATED WASTEWATER

This document serves as a notice of construction (NOC) pursuant to the requirements of Washington Administrative Code (WAC) 246-247-060 for loading radioactively contaminated wastewater into tanker trucks.

Various facilities on the Hanford Site (Figure 1) have or generate liquid waste with radiation levels above drinking water standards. This wastewater needs to be transferred to a mobile tanker truck for transport to appropriate treatment, storage, and/or disposal (TSD) facilities. Facilities that do not have loadout stations equipped with air emission control stacks or vents generate minor diffuse and fugitive radioactive emissions.

There are several types of tanker trucks currently in use on the Hanford Site. Typical tanker truck capacity is approximately 1,000 to 30,000 liters (Figure 2).

The estimated potential total effective dose equivalent (TEDE) to the maximally exposed individual (MEI) resulting from the unabated radioactive emissions associated with the combined annual transfers of loading wastewater into tanker trucks is conservatively calculated to be 6.0 E-2 millirem per year. Because there is no abatement equipment proposed or assumed for the loading activities, the calculated abated TEDE to the MEI also is 6.0 E-2 millirem per year.

1.0 LOCATION

Name and address of the facility, and location (latitude and longitude) of the emission unit:

Potential radioactive liquid waste loading activities could be conducted throughout the Hanford Site. The address and approximate geodetic coordinates for the Hanford Site (using the 300 Area as the calculational basis for tanker truck loading activities) are as follows:

U.S. Department of Energy, Richland Operations Office (DOE-RL)
Hanford Site
Richland, Washington 99352

46° 22" North Latitude
119° 16" West Longitude

2.0 RESPONSIBLE MANAGER

Name, title, address and phone number of the responsible manager:

Mr. Steven H. Wisness, Manager, Office of Site Services
U.S. Department of Energy, Richland Operations Office
P.O. Box 550
Richland, Washington 99352
(509) 373-9337.

3.0 PROPOSED ACTION

Identify the type of proposed action for which this application is submitted.

The proposed action is to transfer radioactive liquid waste (e.g., purgewater, pool cell water, decontamination solutions) from various locations on the Hanford Site to mobile tanker trucks, and subsequently transport the wastewater to the Liquid Effluent Retention Facility (LERF) and/or 200 Areas Effluent Treatment Facility (ETF) on the Hanford Site.

Tanker truck loading activities could include transfer (e.g., vacuum transfer or pumping) of radioactive liquid waste from containers, tanks, pools, or other existing containment structures in and/or adjacent to various existing facilities or wellheads on the Hanford Site.

The proposed action includes isolated instances where small quantities of wastewater (e.g., contaminated stormwater) might be transferred to 55-gallon (208-liter) drums, which subsequently would be transported by truck to LERF and/or ETF. Appropriate controls and monitoring (as discussed in Sections 6.0 and 9.0 respectively) would be applied using a graded approach when considering volume and composition of wastewater to be loaded into drums.

The combined potential emissions associated with this activity are insignificant. The proposed activity represents an insignificant modification of existing units.

4.0 STATE ENVIRONMENTAL POLICY ACT

If the project is subject to the requirements of the State Environmental Policy Act (SEPA) contained in chapter 197-11 WAC, provide the name of the lead agency, lead agency contact person, and their phone number.

The proposed action categorically is exempt from the requirements of SEPA under WAC 197-11-845.

5.0 PROCESS DESCRIPTION

Describe the chemical and physical processes upstream of the emission unit.

A description of the tanker truck and loading operations is provided in the following sections.

5.1 TANKER TRUCK DESCRIPTION

A typical tanker truck is shown in Figure 2. Tanker truck capacity ranges from 1,000 liters to 30,000 liters. Tank trailers (e.g. Specification MC310 and MC 412 cargo tank motor vehicles) used at the Hanford site are purchased, operated, and maintained to meet all federal U.S. Department of Transportation (DOT) specifications, standards, and requirements, as specified in Title 49 Code of Federal Regulations (CFR) Parts 100-185, and 355-399. This includes the authorized use of these conveyances for the transport of bulk low-specific activity radioactive liquids per 49 CFR 173.427.

5.2 TANKER TRUCK LOADING ACTIVITIES

All work would be performed in accordance with approved radiological control methods and as low as reasonably achievable (ALARA) program requirements. These requirements would be carried out through work packages, operating procedures, radiological work permits, or other work instructions.

The general chemical and physical processes associated with tanker truck loading activities would consist of the following.

- A tanker truck would be deployed to the appropriate location. Appropriate hookups would be made between the source and the tanker truck (e.g., pumps, jumpers, hoses, etc.). Hookups would be inspected during transfer to verify leak-tight connections.

- Transfer of liquid waste would be conducted while monitoring the volume. (Note: before any transfer, waste characterization data would validate that the liquid waste meets the waste acceptance criteria of the appropriate receiving facility.)

- After filling the tanker truck, fittings would be disconnected and closed. All liquid/gas release points on the tanker would be closed. Appropriate decontamination would be performed to reduce residual external smearable radioactive contamination before releasing the tanker truck for overland transport.

- Spill prevention measures would be in place to mitigate release of radioactive material to the atmosphere and/or to the ground during hookup, transfer, and disconnect operations. Such measures could include catch containers or ground cover under valves.

- Periodic maintenance and inspections of the tanker truck vents and valves would be performed. Maintenance and inspection schedules would be consistent with applicable DOT requirements.

The general chemical and physical processes associated with drum loading activities would be similar to tanker truck loading activities using a graded approach when considering volume and composition of wastewater.

6.0 PROPOSED CONTROLS

Describe the existing and proposed abatement technology. Describe the basis for the use of the proposed system. Include expected efficiency of each control device, and the annual average volumetric flow rate in cubic meters/second for the emission unit.

There is no airborne emissions abatement control equipment associated with the tanker truck/drum loading activities. Many of the emission controls used for the diffuse and fugitive emissions during tanker truck loading operations would be administrative, based on ALARA principles and consist of ALARA techniques as delineated in the Hanford Site radiation control procedures. The tanker/drum loading operations would be performed in accordance with the controls specified in a radiation work permit (RWP) and/or operating procedures, available for inspection upon request.

It is proposed that the controls specified in the RWP and/or operating procedures in effect at the time of operations satisfy as low as reasonably achievable control technology (ALARACT) for the tanker/drum loading activities. Such controls, minimizing airborne radioactive emissions resulting from the tanker truck/drum loading operations, include the following.

- All activities would be conducted under the auspices of radiological control technicians.

- Tanker truck fittings and valves would be designed as leak tight, and materials of construction would be compatible with chemical composition/constituents of wastewater.

- Liquid transfers would be conducted under controlled volume and flow rates to ensure the tanker truck/drum capacity was not exceeded

- Minimal heels would remain in the tanker truck/drum after offloading operations at the receiving facility, minimizing emissions during reuse.

- Tanker truck offloading would be conducted such that the conservatively estimated frequency of radioactive liquid waste transfers requiring the use of a tanker truck would be less than 2,000 times per year. The estimated frequency of radioactive liquid waste transfers requiring the use of drums would be less than 1 percent of tanker truck transfers.

- The maximum radionuclide inventory associated with routine airborne releases would be very small. Appropriate spill prevention procedures would be in place to minimize the probability of an accidental release of radioactive liquid waste to the environment, and provide immediate cleanup of any liquid spills.

7.0 DRAWINGS OF CONTROLS

Provide conceptual drawings showing all applicable control technology components from the point of entry of radionuclides into the vapor space to release to the environment.

Conceptual drawings are not applicable because the emissions controls to be used during these activities are defined administratively, based on ALARA principles and consist of ALARA techniques. There is no radionuclide abatement control technology equipment proposed for the tanker truck/drum loading operations.

8.0 RADIONUCLIDES OF CONCERN

Identify each radionuclide that could contribute greater than ten percent of the potential to emit TEDE to the MEI, or greater than 0.1 mrem/yr potential to emit TEDE to the MEI.

Any radionuclide might be present in the liquid waste transferred to the tanker truck/drum. The radionuclides of concern for this activity are calculation based. As shown in Table 1, conservative dose/emission calculations are based on total alpha (all represented by americium-241) and total beta/gamma (all represented by strontium-90) constituents that could contribute greater than 10 percent of the TEDE to the MEI. No constituent would provide greater than 0.1 mrem/yr TEDE to the MEI.

9.0 MONITORING

Describe the effluent monitoring system for the proposed control system. Describe each piece of monitoring equipment and its monitoring capability, including detection limits, for each radionuclide that could contribute greater than ten percent of the potential to emit TEDE to the MEI, or greater than 0.1 mrem/yr potential to emit TEDE to the MEI, or greater than twenty-five percent of the TEDE to the

MEI, after controls. Describe the method for monitoring or calculating those radionuclide emissions. Describe the method with sufficient detail to demonstrate compliance with the applicable requirements.

The potential unabated offsite dose associated with the combined annual transfers under this activity is calculated to be less than 0.1 millirem per year (refer to Table 1). Therefore, in accordance with 40 CFR 61, Subpart H, periodic confirmatory measurements (PCM) would be made to verify the low emissions.

The near-field ambient air sampling program currently in effect for the Hanford Site would be used to verify low emissions (PNNL-13910). Currently this program collects and measures samples of the alpha and beta ambient air activity every 2 weeks. Isotopic analysis of those samples currently is determined and reported every 6 months. The sampling frequency is subject to change; however, the near-field ambient air quality program remains the mechanism for satisfying the requirement for PCM.

The proposed PCM for the diffuse and fugitive emissions additionally would consist of the radiological surveys during tanker truck/drum loading operations (e.g., smears and hand-held radiation monitoring measurements on the connections and exterior of the tanker truck). These methods of PCM are not a direct measurement of effluent emissions. The methods are intended to help verify low emissions by showing that being under the contamination levels by which work is controlled (e.g., waste acceptance criteria), the actual emissions inherently would be below the estimated emissions, which are based on and calculated from the same contamination levels.

10.0 ANNUAL POSSESSION QUANTITY

Indicate the annual possession quantity for each radionuclide.

The annual possession quantity is considered to be approximately 3,300 curies. The basis is the "Radioactive Air Emissions Notice of Construction Addition of Filter Skid to Load-In Station" [Routine Technical Assistance Meeting (RTAM), approved by Washington State Department of Health (WDOH), March 31, 1999]. As discussed therein, the radionuclide concentrations (attached) in the waste solutions received through the ETF Load-In Station Filter Skid are the same as the average concentrations approved for ETF in the January 14, 1997 RTAM. A maximum of 824 curies is expected to be transferred through the ETF Load-in Station Filter Skid each year. This represents the filtered wastewater received at LERF/ETF (approximately 25 percent of the volume). For conservatism, the annual possession quantity is estimated to be 4 times the filtered wastewater activity, or 4 times 824 curies, or 3,300 curies (rounded). The maximum inventory in any one tanker would be no greater than 2 curies (refer to Section 13.0). The maximum inventory in any one drum would be no greater than 0.002 curies.

11.0 PHYSICAL FORM

Indicate the physical form of each radionuclide in inventory: Solid, particulate solids, liquid, or gas.

The physical form of the radionuclides in the tanker truck/drum predominantly would be particulate solid suspended in water and liquid. Some inconsequential amounts of gaseous constituents might be present in the tanker/drum vapor space. There is a potential for a heel of residual material to form, consisting of sludge and other particulate solid material.

12.0 RELEASE FORM

Indicate the release form of each radionuclide in inventory: Particulate solids, vapor or gas. Give the chemical form and ICRP 30 solubility class, if known.

For purposes of emission and offsite dose estimates, the release of the radionuclides in the inventory presented in Section 10.0 is assumed to be in the form of particulates (gaseous radionuclide contributions are inconsequential).

13.0 RELEASE RATES

Give the predicted release rates without any emissions control equipment (potential to emit) and with the proposed control equipment using the efficiencies described in subsection (6) of this section. Indicate whether the emission unit is operating in a batch or continuous mode.

The predicted release rates for each radionuclide, without any emissions control equipment (unabated), are presented in Table 1 using the appropriate release fractions for approval, in accordance with WAC 246-247-030 (21)(a). The total potential release rates for the radionuclides of concern (unabated) are summarized in Table 1. Because there is no air emissions abatement equipment proposed, the abated releases are assumed to be the same as unabated releases.

The tanker truck/drum loading operations would operate in a batch mode.

The potential to emit (PTE) is based on total alpha (as americium-241) and total beta/gamma (as strontium-90). For conservatism, releases are calculation based.

Cargo tank trailers (e.g. Specification MC310 and MC 412 cargo tank motor vehicles) used on the Hanford Site are purchased, operated, and maintained to meet all federal DOT specifications, standards, and requirements, as specified in 49 CFR Parts 100-185, and 355-399. This includes the authorized use of these conveyances for the transport of bulk low-specific activity radioactive liquids per 173.427.

Potential fugitive emissions from tanker truck transfers are modeled as with the conservatism of a free-fall spill of an aqueous solution (with a density of approximately 1.0) onto a hard, unyielding surface. The general physical properties of tanker truck transfers are the same as for the model; i.e., liquid falling from a relatively short distance (i.e., less than 3 meters) onto an unyielding surface. Consistent with the model presented in *Airborne Release Fractions/Rates and Respirable Fractions for Nonreactor Nuclear Facilities* (DOE-HDBK-3010-94), a conservative bounding value for the airborne release fraction[1] for from tanker truck transfers of an aqueous solution with a density near 1 would be 2 E-04. Because for the tanker truck transfers the discharge of 30,240 liters falls into a confined space (i.e., tanker), and any resuspended material would mix with the uncontaminated air space before release, a conservative release fraction for tanker loading is assumed to be the aforementioned DOE-HDBK-3010-94 airborne release

[1] Airborne release fraction: the coefficient used to estimate the amount of a radioactive material that can be suspended in air and made available for airborne transport under a specific set of induced physical stresses.

fraction (i.e., 2 E-04)[2]. Therefore, the amount of airborne liquid would be 2 E-04 x 30,240 liters per transfer, or approximately 6 liters per transfer.

Assuming maximum ETF acceptance criteria for americium-241 (1.4 E-09 Ci/liter) and strontium-90 (4.2 E-05 Ci/liter), the maximum fugitive emissions from any one maximum 30,240-liter tanker truck transfer would be 4.2 E-09 Ci alpha (as americium-241) and 1.3 E-04 Ci beta/gamma (as strontium-90).

There would be up to thousands of transfers per year. For conservative calculations, it is assumed that a total volume of no more than approximately 60,000,000 liters could be transferred in a year. Therefore, if 6-liter airborne volume results from a 30,240-liter transfer, the total calculated airborne volume in a year (from the 60,000,000 liters) would be approximately 12,000 liters (60,000,000 liters/ 30,240 liters x 6 liters). Further, assuming that 20 percent of the transferred volume is at the maximum ETF acceptance criteria, 40 percent of the transferred volume is at 50 percent of the ETF acceptance criteria and 40 percent of the shipped volume is at 10 percent of the ETF acceptance criteria, the total fugitive emissions for tanker truck transfers are as follows.

Alpha:

12,000 liters x 0.2 x [(1)(1.4 E-09 Ci/liter)]	=	3.4 E-06 Ci
12,000 liters x 0.4 x [(0.5)(1.4 E-09 Ci/liter)]	=	3.4E-06 Ci
12,000 liters x 0.4 x [(0.1)(1.4 E-09 Ci/liter)]	=	6.6 E-07 Ci
Total	=	7.4 E-06 Ci americium-241

Beta/gamma:

12,000 liters x 0.2 x [(1)(4.2 E-06 Ci/liter)]	=	1.0 E-02 Ci
12,000 liters x 0.4 x [(0.5)(4.2 E-06 Ci/liter)]	=	1.0 E-02 Ci
12,000 liters x 0.4 x [(0.1)(4.2 E-06 Ci/liter)]	=	2.0 E-03 Ci
Total	=	2.2 E-02 Ci strontium-90

Additionally, small releases could occur as spills during connect/disconnect operations. Assuming a 1-liter spill could occur at a frequency of 1 percent, the additional release volume would be 20 liters. Conservative spill releases (20 liters at the maximum ETF acceptance criteria) thus are calculated to be:

20 liters x 1.4 E-09 Ci/liter americium-241	=	2.8 E-08 Ci alpha (as americium-241)
20 liters x 4.2 E-06 Ci/liter strontium-90	=	8.4 E-05 Ci beta/gamma (as strontium-90).

[2] Unlike in the case of the free-fall spill onto an open surface, the airborne material inside the tanker would be contained inside the air space of the tank and only could reach the environment through the small vent orifice of the tank. The time required to fill the tank and displace the air through the vent line would allow time for a fraction of the airborne material to recombine or settle back into solution. Additionally, the spill height determines the amount of gravitational energy available to break up and rebound particles on impact. The spill height also influences the amount of time source material is exposed to shear forces during the fall; therefore, taller spill heights produce elevated airborne quantities. The model held the spill height constant at 3 meters; when in reality, the spill height would decrease as the tank truck filled.

Therefore, the total release for up to 60,000,000 liters transferred would be the summation of airborne and spill:

alpha (as americium-241): 7.4 E-06 Ci + 2.8 E-08 Ci = 7.4 E-06 Ci
beta/gamma (as strontium-90): 2.2 E-02 Ci + 8.4 E-05 Ci = 2.2 E-02 Ci.

It is assumed that drum loading operations would constitute no more than 1 percent of the transfers identified above for tanker truck loading.

14.0 LOCATION OF MAXIMALLY EXPOSED INDIVIDUAL

Identify the MEI by distance and direction from the emission unit.

The maximum public receptor (MPR) was assumed to be a hypothetical, MEI who eats food grown regionally. In this case, for maximum conservatism, the MPR was assumed to be an offsite individual located 1,100 meters northeast of the 331 Building in the 300 Area (HNF-3602, Revision 1). Based on CAP-88 model results (represented in HNF-3602, Revision 1), the assumed 300 Area location was chosen because the 300 Area represents the Hanford Site location of highest offsite millirem per year TEDE to the MEI per unit curie released.

15.0 TOTAL EFFECTIVE DOSE EQUIVALENT TO THE MAXIMALLY EXPOSED INDIVIDUAL

Calculate the TEDE to the MEI using an approved procedure. For each radionuclide identified in sub section (8) of this section, determine the TEDE to the MEI for existing and proposed emission controls, and without any existing controls using the release rates from subsection 13 of this section. Provide all input data used in the calculations.

The CAP88 PC computer code was used to model atmospheric releases using Hanford Site-specific parameters[3]. The MPR was assumed to be located offsite from the 300 Area. Using those calculated unit dose conversion factors, the estimated potential TEDE to the MEI resulting from the unabated fugitive emissions from tanker truck/drum transfer activities is 6.0 E-02 millirem per year (refer to Table 1). No abatement equipment is assumed; therefore, the abated TEDE also is 6.0 E-02 millirem per year.

The TEDE from all 1999 Hanford Site air emissions (point sources, diffuse, and fugitive sources) was reported as 0.068 millirem (DOE/RL-2000-37). The emissions resulting from tanker truck/drum loading activities in conjunction with other operations on the Hanford Site would not result in a violation of the National Emission Standard of 10 millirem per year (40 CFR 61, Subpart H).

[3] Permission to use Hanford Site-specific parameters granted in letter from D.E. Hardesty of EPA to J.B Hebdon at DOE-RL, dated March 22, 2001, Subject: U.S. Environmental Protection Agency's third response to the new maximally exposed individual definition.

16.0 COST FACTORS OF CONTROL TECHNOLOGY COMPONENTS

Provide cost factors for construction, operation, and maintenance of the proposed control technology components and the system, if a BARCT or ALARACT demonstration is not submitted with the NOC.

There are no control technology equipment components or systems; therefore, there are no control technology cost factors associated with the proposed activity. The emission controls used during the transfer-related activities administratively would be defined and consist of ALARA principles and techniques.

17.0 DURATION OR LIFETIME

Provide an estimate of the lifetime for the facility process with the emission rates provided in this application.

Tanker truck/drum loading operations would be conducted on an as-needed basis; the expected lifetime of tanker truck/drum operations would be up to 20 years.

18.0 STANDARDS

Indicate which of the following control technology standards have been considered and will be complied within the design and operation of the emission unit described in this application:

ASME/ANSI AG-1, ASME/ANSI N509, ASME/ANSI N510, ANSI/ASME NQA-1, 40 CFR 60, Appendix A Methods 1, 1A, 2, 2A, 2C, 2D, 4, 5, and 17, and ANSI N13.1.

The listed control technology standards have been considered. No abatement control equipment is proposed. The administratively defined ALARA based emission controls proposed for these tanker truck/drum transfer-related activities are proposed as adequate to limit and control emissions.

19.0 REFERENCES

DOE-HDK-301094, *DOE Handbook, Airborne Release Fractions/Rates and Respirable Fractions for Nonreactor Nuclear Facilities*, U.S. Department of Energy, Washington, D.C.

DOE/RL-2000-37, *Radionuclide Air Emissions Report for the Hanford Site, Calendar Year 1999*, June 2000, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Ecology, 1994, D. Nylander to J. Bauer, U.S. Department of Energy, Richland, Concurrence with Emissions Evaluation for Approval of Deactivation of PUREX Plant Pursuant to WAC 173-400 and WAC 173-460, April 11, 1994.

HNF-3602, *Revision 1: Calculating Potential to Emit Releases and Doses for FEMPs and NOCs*, Fluor Hanford, Richland, Washington.

PNNL-13910. Appendix 2, *Hanford Site Near-Facility Environmental Monitoring Data Report for Calendar Year 2001*, September 2002, Pacific Northwest National Laboratory, Richland, Washington.

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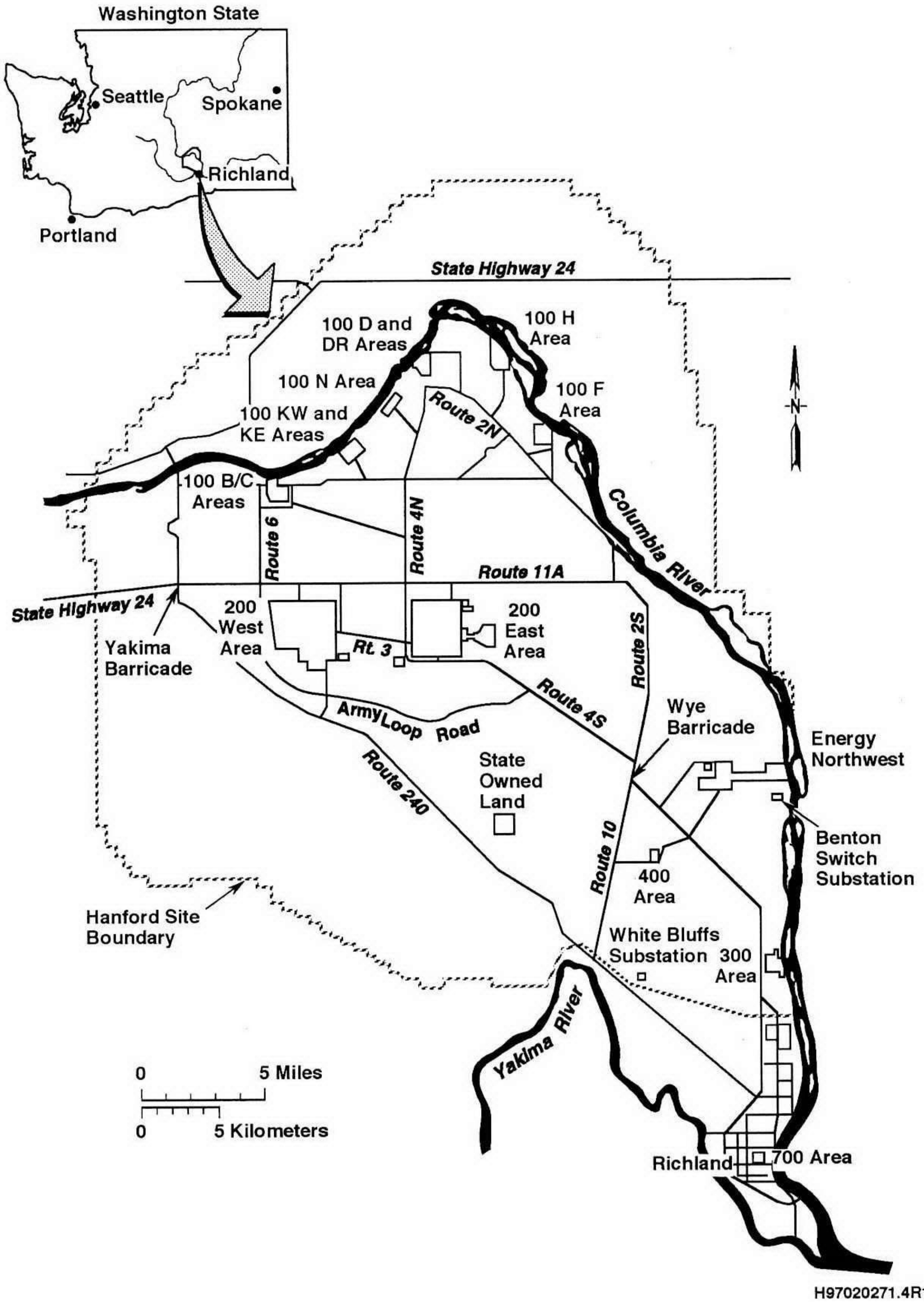

Figure 1. Hanford Site.

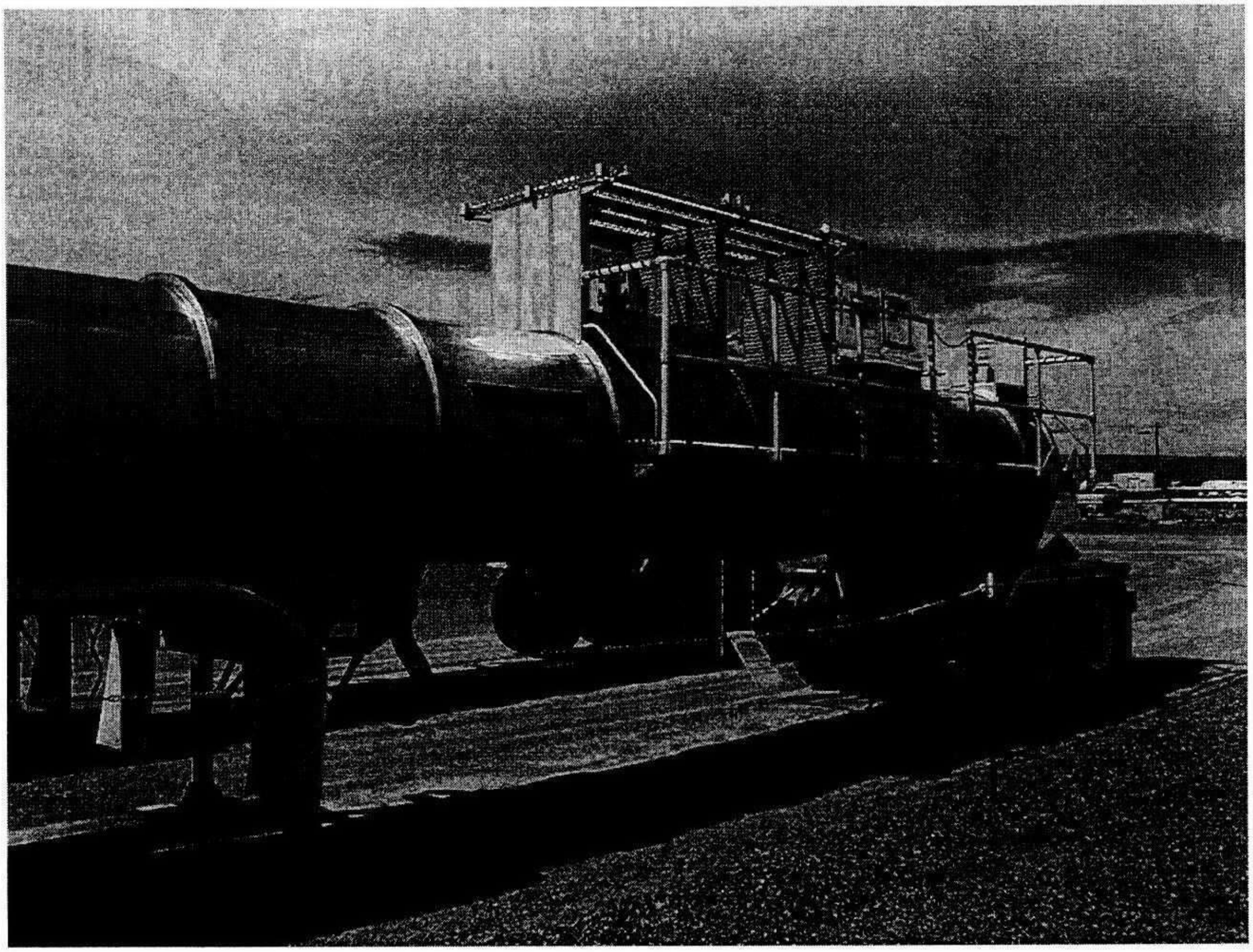

Figure 2. Typical Tanker Truck.

Table 1. Tanker Truck Dose Consequences.

Radionuclides	Potential unabated release (curies/year)	Potential abated release* (curies/year)	Dose factor CAP88-PC** (millirem/curie)	Dose (millirem/year)
Americium-241	7.4 E-6	7.4 E-6	3.0 E+02	2.2 E-3
Strontium-90	2.2 E-02	2.2 E-02	2.6 E+00	5.8 E-2
Total				**6.0 E-2**

* Potential abated release is the same as the potential unabated release because no abatement controls are provided.
** HNF-3602, Rev. 1.

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ATTACHMENT

RADIONUCLIDE CONCENTRATIONS IN WASTEWATER
(Extracted from March 31, 1999 RTAM)

200 Area Effluent Treatment Facility Load-In Station Filtration System
Radionuclide Concentrations in Wastewater

Total volume received	16,000,000 gallons per year
Filter accumulation factor	25%
Number of HEPA filters	0

Radionuclide	Average concentration (picocurie per liter)	Total annual quantity received (curie)
H-3	1.12 E+07	6.78 E+02
C-14	5.13 E+01	3.11 E-03
Na-22	2.03 E+02	1.23 E-02
K-40	1.11 E+03	6.72 E-02
Mn-54	7.77 E+01	4.71 E-03
Co-60	5.49 E+02	3.33 E-02
Zn-65	1.06 E+03	6.42 E-02
Se-79	6.71 E+00	4.06 E-04
Sr-90	1.63 E+06	9.87 E+01
Nb-94	4.25 E+00	2.57 E-04
Zr-95	6.06 E+01	3.67 E-03
Tc-99	1.10 E+05	6.66 E+00
Ru-106	1.96 E+04	1.19 E+00
Sb-125	5.78 E+02	3.50 E-02
I-129	2.71 E+01	1.64 E-03
Cs-134	3.55 E+02	2.15 E-02
Cs-137	6.43 E+05	3.89 E+01
Cd-144	6.09 E+01	3.69 E-03
Eu-154	2.68 E+01	1.62 E-03
Eu-155	3.63 E+01	2.20 E-03
Ra-226	3.70 E+02	2.24 E-02
U-233	1.73 E-03	1.05 E-07
U-234	1.48 E+02	8.96 E-03
U-235	2.10 E+01	1.27 E-03
U-236	2.10 E+01	1.27 E-03
U-238	2.10 E+01	1.27 E-03
Np-237	3.35 E-01	2.03 E-05
Pu-238	8.23 E+01	4.98 E-03
Pu-239/240	1.06 E+03	6.42 E-02
Pu-241	1.02 E+03	6.18 E-02
Am-241	1.58 E+01	9.57 E-04
Cm-244	1.98 E-01	1.20 E-05
Total		**8.24 E+02**

Enclosure 2

NOTICE OF OFF-PERMIT CHANGE FOR THE HANFORD SITE AIR OPERATING PERMIT (AOP) (NUMBER 00-05-006) FOR RADIOACTIVE AIR EMISSIONS NOTICE OF CONSTRUCTION (NOC), DOE/RL-2002-56, REVISION 1, TANKER TRUCK LOADING OF RADIOACTIVELY CONTAMINATED WASTEWATER

HANFORD SITE AIR OPERATING PERMIT

Notification of Off-Permit Change

Permit Number: 00-05-006

This notification is provided to Washington State Department of Ecology, Washington State Department of Health, and the U.S. Environmental Protection Agency as notice of an off-permit change described as follows.

This change is allowed pursuant to WAC 173-401-724(1) as: 1. Change is not specifically addressed or prohibited by the permit terms and conditions 2. Change does not weaken the enforceability of the existing permit conditions 3. Change is not a Title I modification or a change subject to the acid rain requirements under Title IV of the FCAA 4. Change meets all applicable requirements and does not violate and existing permit term or condition 5. Change has complied with applicable preconstruction review requirements established pursuant to RCW 70.94.152.

Provide the following information pursuant to WAC-173-401-724(3):

Description of the change:	
A Radioactive Air Emissions Notice of Construction, *Radioactive Air Emissions Notice of Construction for Tanker Truck Loa Radioactively Contaminated Wastewater*, Revision 0, is being submitted to the Washington Department of Health (Health) an U.S. Environmental Protection Agency (EPA) for approval. A change in the Hanford Site Air Operating Permit is required to incorporate this new potential source of air emissions.	
Date of Change:	
Effective date will be the later of the two approvals by Health or EPA.	
Describe the emissions resulting from the change:	
Radioactive air emissions with the total estimated unabated and abated effective dose equivalents to the hypothetical, maximally exposed individual are 3.0 E-02 millirem per year.	
Describe the new applicable requirements that will apply as a result of the change:	
Applicable requirements will be identified in approval notifications by Health and EPA.	
For Hanford Use Only:	
AOP Change Control Number:	Date Submitted: